BEST PRACTICES FOR ANTI-ICING & PREWETTING

PRESENTERS:

Greg Munden – ITD
Greg Hansen – Washington DOT

What Equipment are Contractors Using?

Greg M

- Idaho pretreats sanding materials by prewetting
- Sand/salt – prewet – limited - good levels of success
- City/county do little pre-wetting – mostly anti-ice intersections and curves
- Equipment
  - Monroe sanders (with pre-wet)
  - Single, multi-lane capable
  - Geyser unit – 2350 gal.
  - Raven controllers
    - 440 monitors
    - 40-45 mph – accurate
- City/county – single lane
- Not many private contractors anti-ice streets; some do parking lots

Greg H – Asked for show of hands of who was using what method

- Washington started anti-icing with Federal money – SHRP Project
- Primarily calcium, magnesium in a few areas, CMA upper N/W area of state
- Cal - 30 gal/ lane mile
- CMA - 40/gal/lane mile
- $MgCl_2$ - 23-30 gal/lane mile
- Started pre-wetting last year

Jerry, Alaska DOT

- Luck with prewet systems?
- Auger onto spinner?
- Percentage of time working?

Greg M

- Now using spray system in chute going to spinner
- Temperatures in Idaho fit with use of magnesium & calcium
- Nozzles fitted with deflector shields
- Screen systems off – hard to clean
- Using TK7.5 spray system
- Problems: sand material is clean air sand – material available is coarser, will not stay on road.

Spray 12 gal/ton
Target: 7.5 – 15 gal. spraying
Had good luck with sander truck followed by deicer truck.

Greg H – Calibrated chain auger speed with truck speed, nozzle 1/3 way down chute before hitting spinner.

Audience member asked about spray direction. Greg H. said he used a little bit of a tip-up.

Audience member said 45º worked best for him.

Greg M - 90º style nozzle (to flow line) keeps chutes and spinners clean, and should force material onto product better.

Audience member said they used four nozzles, center rear discharge, and another person said they used three nozzles, front and rear.

Greg M – More nozzles give better results.
Limited success on I-90 traffic in Coeur d'Alene
Pre-wetted sand on ice
Round, rolls off easily

Both were asked about the size of aggregate they use:
Greg M – ¼" clean material
Greg H – less than ¼" material

Anchorage audience member – They use aggregate in cities on snow or ice pack where liquids can't be used. Do not use aggregate on high-speed roads.

Greg M asked what others are using – Salted sand or straight sand?

Audience member stated they used ½" minus gravel, pre-wet, 15 gal/metric ton, under ¼", 68% salt with sand, mag 8-9 gal/yard.

Greg H – 10:1 mix sand/salt in July-August put in sand sheds – 7-10 gal/ton with salt.

Another audience member said they pre-treated the sand with liquid – 16 liters/ton – sprayer applicator on conveyor belt – 5-7 gallon in piles, prewet - good success in eastern Montana.

Ontario audience member – Heard of horror stories regarding humidity and refreeze issues.

Greg M – Commented that they do a lot of anti-icing. Can last several days, if no moisture falls. Prevents bonding of falling snow. If mag levels in product are above

30%, freeze levels get closer to normal road temperatures. Humidity issue going from solid to liquid, liquid to solid. Putting down with aggregate helps eliminate issue. Spray nozzle is a problem, so use drip lines.

Greg H – More is not better. Most failures are due to over-application.

Greg M – Operators need to note that record keeping is important to building database of knowledge - temperature, snow, dry or wet conditions, etc. Record spray details – where, how much, what time. The key is to communicate, keep good records.

Greg H – Important to do *Standard Operating Procedures* for each area. Night and day crews inform each other about what was done. (*He has three or four different ways to track data using TAPER logs - examples are available to anyone who would like to see them.)*

Northern Alberta audience member – Using mag depends on temperature, application rate, type of asphalt and how much plastic is in asphalt.

Greg M – Testing being done for friction.

Audience member asked, When varying rates based on conditions, who decides?

Greg M – The foremen decide, establish guidance zones. Two different settings: light and heavy - operators are good at knowing which to use. Training is done every year at the beginning of winter.

Greg H – After 13 years of trial and error, they are getting to know their area.

What is the Success of Practices Compared with Traditional Methods?

Greg H – Sanding material production costs more – Savings because there are no catch basins full, less sweeping. CMA smells like vinegar, so there is less animal kill. Washington does not have equipment corrosion problems. New products should be coming out within two years.

Greg M – Good results in western and northern Idaho. Southeast Idaho is not having good results because they are colder and higher. High success rate with $MgCl_2$ used on city and county intersections – accident rates down, and on Interstate up north. There is less snow pack and ice, and crews can concentrate on other areas of maintenance and repairs.

Canadian audience member – Area less compact – less time to replow. Still in learning curve. Humidity adds to problems.

Audience member – Salt residue on black highway – people can't see where slick.

It was mentioned that the PNS Website is a good reference for use of anti-icing, etc.

Greg M – Need to build database of failures and successes.

Greg H – Different forms of calcium, different mag concentrations.

Greg M – Talk to vendors/suppliers – quality assurance program important – do small areas first to experiment, record results.

How to Assure Quality of Product and Measure

Greg M – Recommended procedure:

1. Have a contract
2. Field inspection before pre-loading
3. Testing in lab (He showed audience a field testing device to measure percentage of $MgCl_2$ in material.)

Use of computer alarm sensors for measuring over/under application, speed too fast/slow

Problems: Long-term storage, manufacturing problems

Greg H – Contracts, record of quality control.

Greg M – Is everyone doing quality assurance?

Montana audience member – Has found fertilizer, wheat, barley, crude oil in some loads.

Greg H – Products should be tested at least twice.

Greg M – We test in thirds – at the beginning, middle, and end – hydrometer pre-tester - form used to accept or reject loads when taking samples.

What Changes in Product or Equipment are Needed to Improve State of Practice?

Greg M - Equipment is too high-tech - needs to be made simpler. Operators and mechanics would both be happier. Delivery systems need to be upgraded. Equipment products that are actually useable.

Greg H – Need equipment application rates slow enough – ground radar (speed sensing device) important.

Greg M – Bigger nozzle, lower pressure to eliminate overspray.

Greg H – Slip-in tanks are great. Control switches interchangeable – New equipment is ergonomically correct.

Audience member – Force America Command-All

2500 - low end
Tell vendors: Only need auger, spinner, on-off switch, liquid control.

Audience member – What about temperature sensors?

Greg M – Road and air temperature sensors are important.

Greg H – Washington has infrared sensors – A judgment call - watch weather patterns.

Ontario audience member – They are working with vendors to develop spreaders that will adjust spray direction, widen spray for multi-lane application.

Is Present Training Adequate?

Greg H – Washington lacking in that area – problem with getting information out.

British Columbia audience member – Having good success with training – Web site being developed: Ice and Snow Technologies.com

Greg H – FHWA website – Search using: "Weather," "Winter," etc.

Greg M – Good tools: RWIS and Weather Service.

British Columbia audience member – Need to make sure equipment operators can drive trucks.

Greg M – Need better guidelines for using materials.

Someone asked if presenters have a Standard Operating Procedure for transition from $MgCl_2$ to sanding materials, based on temperature.

Greg H – Experience is needed.

Greg M – Road sensors - temperature.

Greg H – Liquids: anti-ice, de-ice. After snow, sanding materials.

Audience member – Uses sand and salt application with pre-wet – 50-50 mix.

Greg H – Mixing to prevent stockpile from freezing can be cost-prohibitive.

Greg M – Sand sheds help keep sand dry – eliminates the need for salt.

Greg H – Cover materials if possible.

Canada – Provinces getting away from sand/salt mix – municipalities still mixing 50/50.

Greg M reminded everyone of the importance of keeping records.